

REMARKS

Upon entry of the present amendment, a new title will have been submitted for the present application. Additionally, each of the claims will have been amended to enhance clarity as well as to more clearly emphasize the distinctions between the presently claimed invention and the disclosures of the references relied upon. Additionally, claims 17 and 24-26 will have been canceled without prejudice or disclaimer of the subject matter

In view of the herein contained amendments and remarks, Applicants respectfully request reconsideration and withdrawal of each of the outstanding rejections set forth in the outstanding official action. Such action is now believed to be appropriate and proper and is thus respectfully requested, in due course.

In the outstanding official action, the Examiner objected to the title of the invention as not being descriptive. The Examiner required a new title that is clearly indicative of the invention to which the claims are directed.

By the present response, Applicants have submitted a new title which is based upon the suggestion advanced by the Examiner in the outstanding official action. It is respectfully submitted that the newly submitted title is clearly indicative of the invention to which the claims are directed.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the objection to the title and approval for the entry of the newly submitted title into the present application.

In the outstanding official action, the Examiner rejected claims 1, 2, 5-7, 13-18 and 20-26 [sic, claims 1, 2, 5-7, 13, 14, 16-18 and 20-26] under 35 USC 103(a) as being unpatentable over Kubota et al. (U.S. Patent No. 6,288,699). Claim 3 was rejected under 35 USC 103(a) as being unpatentable over Kubota et al. in view of Haines (U.S. Patent No. 4,697,107). Claims 4, 8, and

10-12 [sic, claims 4, 8, 10 and 11] were rejected under 35 USC 103 (a) as being unpatentable over Kubota et al. in fuel of Saito (U.S. Patent Application Publication No. 2001/0054924).

Claim 9 was rejected under 35 USC 103(a) as being unpatentable over Kubota et al. in view of Saito and Takuwa (U.S. Patent No. 5,793,363). Finally, claim 19 was rejected under 35 USC 103(a) as unpatentable over Kubota et al. in view of Someya et al. (U.S. Patent No. 6,924,796).

Applicants respectfully submit that the disclosures of the references, whether considered individually or whether considered in any proper combination, are inadequate and insufficient to disclose, teach, suggest, or even to render unpatentable the combination of features recited in Applicants' pending claims. Applicants additionally submit that even if the references are combined as proposed by the Examiner, the features defining Applicants' invention would not be disclosed therein.

Applicants' invention is directed to a plasma display driven by a subfield system. Utilizing the combination of features recited in Applicants' claim 1 as a non-limiting example of features and aspects of an embodiment of the present invention, the plasma display device to which the claims are presently directed includes a plurality of discharge cells, a clock signal generator that generates a clock signal, a serial data generator that generates serial data according to an image to be displayed and a test signal generator that generates a test signal. A data driver selectively applies a drive pulse to the plurality of discharge cells based on the serial data generated by the serial data generator in synchronization with the clock signal in a write period for selecting a discharge cell to be lighted. A latch failure detector includes a latcher that latches the test signal generated by the test signal generator to detect a presence/absence of a latch failure in the data driver based on an output signal from the latcher in an adjustment period including a sustain period during which light emission of the discharge cell selected in the write period is sustained. A phase adjuster, when a latch failure is detected by the latch failure

detector, adjusts a phase of the clock signal provided by the clock signal generator to the data driver, based on the phase of the clock signal in which the latch failure is detected and a first storage device stores the phase of the clock signal adjusted by the phase adjuster as an optimal phase. Thus, the phase adjuster varies the phase of the clock signal to detect a phase range within which a latch failure does not occur, and stores, in the first storage device, a phase in a center of the detected phase range as the optimal phase during the adjustment period and adjusts the phase of the clock signal to the optimal phase stored in the first storage device in the write period after the optimal phase is stored by the first storage device.

Initially, Applicants note that the Kubota et al is directed to an active matrix type liquid crystal display device. In direct contrast, the presently pending claims are directed to a plasma display device of a subfield system. By the present response, the pending claims have been amended to more clearly and distinctly emphasize this significant distinction between the technology of the primary reference relied upon and that of the claimed invention.

In setting forth the rejection, the Examiner took the position, that in spite of the above noted difference in technology, Kubota et al. is concerned with differences in the phase between the signals and accordingly the signals MON1 and MON2 are used to detect an internal delay. In the active matrix image display device of Kubota et al., the timing of the clock signal CKS and a video signal DAT is optimized while the data based on the video signal is written into a data signal line SL. Further, the phase difference between the clock signal instructing a timing to the data signal line driving circuit 3 and a video signal is illustrated in figure 1, wherein the data signal line driving circuit 3 is designed so that it can output detection signals MON1 and MON2 for detecting an internal delay. Further, timing control circuit 12 includes a delay detecting section for detecting the phase difference, τ_a , between the video signal and the clock signal by calculating the internal delay of the data signal line driving circuit 3 from the phase difference τ_p .

However, according to the plasma display device of the claimed invention, during an adjustment period including a sustain period other than a write period, the phase of the clock signal is varied so that a phase range, where no latch failure occurs, is detected. A phase in the center of the detected phase range is stored as the optimal phase. During the write period after the optimal phase is stored, the phase of the clock signal is adjusted to the stored optimal phase. In order to detect the phase range within which no latch failure occurs, it is thus necessary to intentionally generate a latch failure by varying the phase of the clock signal. The intentional generation of a latch failure is performed during the adjustment period other than the write period and accordingly does not affect a writing operation for selection of discharge cells to be discharged. Accordingly, the structure of the present invention involves adjusting the phase of the clock signal by utilizing the sustain period, which is specific to a plasma display device of the subfield system. These features are not applicable to an active matrix type liquid crystal display device to which the Kubota et al device is directed.

In particular, since the image display device of Kubota et al. is an active matrix type of crystal display it contains no sustain period other than the write period. Accordingly, in the active-matrix type image display device to which Kubota et al. is directed, it is necessary that the timing of the clock signal CKS and the video signal DAT (i.e. the phase difference therebetween) is optimized while data based on the video signal is written into the data signal line SL. Accordingly, it is not possible in such a device, to detect a phase range where no latch failure occurs by intentionally generating a latch failure, which is a feature of the present invention.

None of the other references relied upon by the Examiner with respect to the various features recited in independent claim 1 have disclosures that are adequate or sufficient to supply and thus overcome the above noted shortcomings and deficiencies of the primary Kubota et al.

reference. Further, Applicants respectfully note that in the explanation of the rejection with respect to claim 17, the Examiner merely takes the position that in order to adjust the phase to an optimal value, it is obvious that the device must have an optimal value stored, since no optimal value is provided from an external source. There is no basis for the Examiners assertion of obviousness in this regard.

With respect to claim 24, the Examiner asserts that it would have been obvious to set the adjustment period to a sustain period during which light emitting of the discharge cell selected in the write period is sustained. However, as previously noted, since the Kubota et al. device is related to an active-matrix type liquid crystal display device, there is no sustain period therein, with the exception of the write period.

For each of the above noted reasons considered individually and certainly in view of all of the above noted reasons taken in combination, it is respectfully submitted that the claims pending in the present application are clearly patentable over the various references asserted thereagainst in the outstanding official action.

The various dependent claims that are pending in the present application are submitted to be patentable based upon their dependence from a shown to be allowable base claim as well as based on their respective additional recitations. An action to such effect is respectfully requested in due course.

SUMMARY AND CONCLUSIONS

Applicants have made a sincere effort to place the present application into condition for allowance and believe that they have now done so. Applicants have amended the title to enhance the descriptiveness thereof. Applicants have additionally amended the independent claim to clarify the features of the present invention and to emphasize the distinctions between the present invention and the references asserted thereagainst. Additionally each of the dependent claims have been amended in order to emphasize that the present invention is directed to a “plasma display”. Further, several claims will have been canceled without prejudice or disclaimer of the subject matter.

Applicants have discussed the disclosure of the primary reference relied upon by the Examiner in the outstanding official action and have pointed out the shortcomings thereof. Applicants have additionally discussed, with reference to the explicit recitations of Applicant's claims, the deficiencies of the disclosure of the references relied upon by the Examiner in the outstanding official action. Accordingly, Applicants have provided a clear and convincing evidentiary basis supporting the patentability of all of the claims pending in the present application and respectfully request an indication to such effect, in due course.

Any amendments to the claims which have been made in this response, and which have not been specifically noted to overcome a rejection based on the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

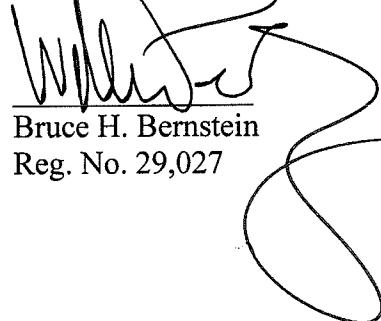
Should an extension of time be necessary to maintain the pendency of this application, including any extensions of time required to place the application in condition for allowance by an Examiner's Amendment, the Commissioner is hereby authorized to charge any additional fee to Deposit Account No. 19-0089.

If there should be any questions concerning this application, the Examiner is invited to contact the undersigned at the telephone number listed below.

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